

Tennessee Energy Division

Department of Economic & Community Development



2010-2011

ANNUAL REPORT



Energy Division Background

The state legislature established the Energy Division under TCA § 4-3-704 to administer the federal grant programs previously administered by the Tennessee Energy Authority (TEA) and to oversee preparations related to energy emergencies. The legislature also gave the division responsibility for collecting and analyzing data on the availability of various energy resources within the state.

Originally organized as an emergency planning office, the TEA managed the statewide allocation of motor fuel during the Oil Embargo of 1973. These activities resulted in the development of the State Set Aside Program that continues to be a major responsibility of the division in the event of an energy emergency. In 1983, the state legislature transferred the TEA roles to the Department of Economic & Community Development (ECD) establishing the Energy Division (TCA § 4-3-708). Since its establishment, the Energy Division continues to manage a wide variety of federally funded, energy efficiency and renewable energy related programs designed to optimize the efficient use of energy.

(Note: This report covers FY July 1, 2010 - June 30, 2011)

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T.C.A. § 4-3-708 - Energy Division - - General Powers

- (9) (A) Prepare an annual report on the activities of the division, including information on conservation, energy management, renewable industry investments and recruitments, and energy savings goals set and realized by the programs administered by the division;
- (B) The report shall be submitted to the governor, the speakers of the Senate and House of Representatives, and the chair of the senate and house committees on government operations, energy, and conservation, or their successor committees.

Tennessee has three primary state energy program goals:

- First – reduce energy consumption and improve energy efficiency across the residential, commercial, industrial, governmental and transportation sectors;
- Second – expand the availability and use of renewable energy sources;
- Third – support technology transfer and commercialization activities that encourage economic growth in the state's clean energy technology sector.

STATE ENERGY PROGRAM (SEP)

The State Energy Program is an annual grant from the Department of Energy that provides financial and technical assistance to states through formula and competitive grants. The SEP allows states to develop strategies and goals to address their energy priorities. The Energy Division's SEP initiatives for Fiscal Year 2010-2011 included:

- Grants Management**
- Tennessee Energy Education Network**
- Energy Emergency Planning (SEP portion)**
- Public Education & Outreach**

ENERGY DIVISION'S BASIC PROGRAM ACTIVITIES (FY 2010-2011)

Small Business Energy Loan Program (SBELP)

The program was developed to help private sector companies increase energy efficiency, upgrade equipment, retrofit buildings and improve operations. The loan program is a revolving loan program that was available to existing Tennessee small businesses of less than 300 employees or \$3.5 million in annual gross sales or receipts. Loan recipients received a low or 0%- interest loan of up to \$300,000. The program has been closed to new applicants since May 2010. There are 40 outstanding Small Business Energy Loans, with the last loan payment expected in 2017.

Local Government Energy Loan Program (LGELP)

The program was started in late 1991. It is similar to the Small Business Energy Loan Program in that it offered low interest loans to municipal and county governments to improve the energy efficiency of local government-owned buildings such as courthouses, administration, maintenance and emergency response facilities and schools. The program has been closed to new applicants since July 2009. There are 50 outstanding Local Government Energy Loans, with the last loan payment expected in 2016.

Tennessee's Electric Vehicle Rebate Program

In September of 2010, the State of Tennessee announced the \$2.5 million Electric Vehicle Rebate Program. A \$2,500 rebate is available to the first 1,000 Tennessee residents that qualify for and participate in the national Electric Vehicle Project (EV Project) and purchase either a Nissan LEAF SL model car with DC Fast Charge capabilities or a Chevrolet Volt.

Between September 2010 and June 30 2011, the EV Rebate Program coordinated with Nissan by registering dealers for participation. The delayed shipment of Nissan LEAF vehicles to the US resulted in only 37 applications for rebates and approximately 25 paid. By the end of the calendar year for 2011, Tennessee had paid 179 rebates at \$2,500 each for a total of \$447,500. The GM Volt will be added to the program in FY 2012. Tennessee was not one of the markets for GM's early deployment.

The EV Project is funded by the U.S. DOE and focuses on the deployment of electric vehicle charging infrastructure in 18 major cities and metropolitan areas located in six states and the District of Columbia: California, Oregon, Washington, Arizona, Texas, Tennessee, and Washington, D.C. Chevrolet and Nissan North America are partners in the EV Project. Data will be collected from the charging infrastructure and analyzed by the U.S. DOE. The Energy Division participates on the state advisory board for the EV Project in Tennessee.

Tennessee's Clean Energy Technology Program

This program awarded 79 grants to Tennessee businesses installing solar photovoltaic systems from 2006 through 2010. The program was closed to new applicants at the end of Fiscal Year 2009-2010. Monitoring and grant activity is expected to be complete by December 2011.

During the course of this program, \$4,445,405 was committed to grant projects in order to leverage approximately \$12,115,677 of private investment. The solar installations range from the largest at Sharp Electronics in Memphis, with 154 kilowatts (kW) capacity, to several small plant nursery installations in the 4-7 kilowatts (kW) capacity range. The program has supported 437 kilowatts of total installed capacity through June 30, 2011.

Tennessee Energy Education Network (TEEN)

In 2008, the Tennessee Energy Education Network partnered with The University of Tennessee to launch the Energizing TN 4H program. The program initially involved 23 counties and has grown to more than 50 counties. All counties participating in the program for the first time receive \$2,000 to purchase National Energy Education Development Project (NEED) curriculum kits developed especially for 4H including chemical, light, heat and motion energy.

4H professionals attend workshops conducted by TEEN and incorporate activities into 4H club meetings. Counties already enrolled in the program received the Tapping Earth's Energy Resources teaching kit from TEEN which addressed the Tennessee seventh grade science standards on renewable energy. Returning counties also received a mini-grant up to \$1000 to support their energy program this year. The Energizing TN 4H Program continues to educate both students and community members and encourage parents to become more energy efficient in their homes and community. 4H students also promoted the Tennessee Valley Authority, Home Energy Survey and the "Change the World, Start with Energy Star" campaign.

TEEN 2010-11 Highlights:

- During the school year, the Energizing 4H program reached 43,385 students.
- Nashville hosted the Regional National Science Teachers Association conference. TEEN held a Meet & Greet reception for Tennessee science teachers with 150 in attendance. Solar demonstrations were conducted for students and the general public reaching 250 following the conference.
- Ninety-one teachers attended three Energy Camps in June with information and resources to teach the science of energy, energy efficiency and energy conservation in the classroom.
- Fifteen schools participated in the annual NEED Youth Awards for Energy Achievement competition reaching 32,926 students statewide. State award winners were Robert E. Lee Elementary School, Tullahoma; White Pine School, White Pine; Unicoi Middle School, Erwin; Franklin County High School, Winchester; and Sumner County 4H, Gallatin.
- The Annual TEEN Awards luncheon was held to honor students, teachers and schools participating in TEEN program activities for the year.
- Two Energy Management Workshops for Schools were conducted which provided tools, curriculum and hands-on classroom kits to help schools meet instructional and facilities energy goals.
- Ten 4H professionals from five counties received a trip to attend the NEED Educators Conference in Denver, CO for their outstanding participation in the 4H Program. The winning counties included Sumner, Sullivan, Washington, Unicoi, and Stewart.

Grants Management

The primary objective of this program is to maximize the technology transfer and energy savings potential of the State Energy Program (SEP) grant, Petroleum Violation Escrow (PVE) funds, and other competitive grant funds through program planning, management, and implementation of the program monitoring function. The program monitoring responsibilities include tracking the accomplishment of budgeted goals and milestones against baselines established in the state plan; identifying and analyzing program accomplishments or problems; developing and initiating corrective action; analyzing performance of contractors, subcontractors, and subgrantees in regard to contract provisions; and tracking corrective or follow-up activity. The Energy Division monitors all elements of the State Energy Program through an array of periodic reports and on-site monitoring visits.

Public Education & Outreach

The Energy Division maintains energy information and responds to requests through our toll-free Energy Hotline and email address. This program promotes energy efficient programs and technologies to organizations and citizens throughout the state. The ARRA funded programs increased the number of calls and responses by these established means of communication. During this fiscal year, we responded to over a 1,000 requests for information from constituents.

Energy Emergency Planning:

The goal of Energy Emergency Planning is to increase Tennessee's preparedness for disruptions related to the state's energy resources. The Energy Division oversees all ESF-12 activities under the Tennessee Emergency Management Plan, serves as the department liaison to TEMA, attends energy emergency planning exercises and seminars and maintains information relative to the Motor Fuel Contingency Plan.



The American Recovery and Reinvestment Act of 2009

ARRA PROGRAMS/FUNDS IN ECD/ENERGY DIVISION

The Energy Division received funding from the US Department of Energy (DOE) under the American Recovery and Reinvestment Act (ARRA) and the State Energy Program. The ECD/Energy Division received approximately \$111.5M for four programs.

Program	Federal Agency	Description	Tennessee Amount
STATE ENERGY PROGRAM	U.S. Department of Energy	Volunteer State Solar Initiative, consisting of two initiatives: the Tennessee Solar Institute and the West Tennessee Solar Farm.	\$62,482,000
ENERGY EFFICIENCY AND CONSERVATION BLOCK GRANTS	U.S. Department of Energy	Tennessee will use funding to assist small- and medium-sized cities and counties to conserve energy and reduce fossil fuel emissions.	\$42,243,200 (ECD administering \$13,818,200)
ENERGY STAR APPLIANCE REBATE	U.S. Department of Energy	This project provides federal support for state-level rebate programs for consumer purchases of new ENERGY STAR® qualified home appliances.	\$5,963,000
ENHANCING STATE GOVERNMENT ENERGY ASSURANCE CAPABILITIES AND PLANNING FOR SMART GRID RESILIENCY	U.S. Department of Energy	Enhancing State Government Energy Assurance Capabilities and Planning for Smart Grid Resiliency dollars will be used to improve state emergency preparedness plans and ensure quick recovery and restoration from any energy supply disruptions.	\$770,233

<http://www.tn.gov/ecd/recovery/index.html> - #
<http://www.tn.gov/ecd/>

ARRA - STATE ENERGY PROGRAM

Tennessee Department of Economic and Community Development (ECD) was awarded \$62.5 million dollars of Recovery Act funding from the US Department of Energy (DOE) under the State Energy Program (SEP). This one-time funding is limited for use on DOE-approved energy efficiency and renewable energy activities. Tennessee's plan received full DOE approval in October 2009.

Tennessee's plan, referred to as the Volunteer State Solar Initiative, is a comprehensive solar energy and economic development program, focusing on job creation, education, renewable power production, and technology commercialization.

Building upon current efforts to grow the solar value chain in Tennessee, the program is stimulating short-term economic growth while positioning the state to support long-term expansion of the solar industry. Recovery Act funds dedicated to the program are being used to accelerate national market transformation in a manner that will create quality Tennessee jobs, boost domestic solar industry competitiveness, and move the state towards a clean energy future.

The initiative consists of two separate, but related, projects:

The **Tennessee Solar Institute** (<http://solar.tennessee.edu/>) at the University of Tennessee (UT) and Oak Ridge National Laboratory (ORNL), which focuses on industry partnerships and workforce development to improve the affordability and efficiency of solar products; and

The **West Tennessee Solar Farm** (<http://solarfarm.tennessee.edu/>), a five-megawatt DC generation facility in Haywood County that will be one of the largest installations in the Southeast and serve as a demonstration tool for education and economic development.

The Initiative positions Tennessee as a leader in the solar value chain. According to DOE, the net result of the Volunteer State Solar Initiative will be to advance solar technology, promote the use of renewable energy statewide, lower fossil fuel emissions, decrease the state's dependence on foreign oil, and create solar industry jobs across Tennessee.

Tennessee Solar Institute

- The Tennessee Solar Institute at the University of Tennessee (UT) and Oak Ridge National Laboratory (ORNL) is a center of excellence created to spur accelerated growth in Tennessee's burgeoning solar industry and serve as a crossroads for a wide-range of solar-related activities in the Tennessee. As a part of its core mission, the Institute is bringing together scientists, students, policymakers, and industry partners to generate transformative changes to the field of solar-generated energy production.
- ECD contracted with the University of Tennessee for the establishment of Tennessee Solar Institute in Knoxville in April 2010. The total contract value is \$29M. This initial seed investment enables UT to leverage additional non-state research and programmatic funding to support future operations. As an example, in fall 2010 NSF awarded UT a \$20M grant, in large part due to ECD's investment, which will go towards funding additional solar R&D programs at Tennessee universities.
- Tennessee Solar Institute administers two grant programs through its Solar Opportunity Fund. The fund is being used to underwrite a series of solar innovation and solar installation grants to businesses across the state. Approximately \$23.5 million in grants will be distributed to solar-industry firms looking to strengthen or expand their operations, as well as Tennessee businesses looking to install solar-energy generation systems.

- The Solar Innovation Grant Program targets existing Tennessee solar firms and Tennessee businesses seeking to enter the solar value chain. TSI awarded grants to businesses for technical assistance, facility improvements, process improvements, technology improvements, renewable energy product demonstration and workforce development under this program. Innovation Grants were awarded in two rounds.
- The Solar Installation Grant Program is speeding the deployment of solar energy statewide through grants to businesses to fund the purchase and installation of small-scale solar photovoltaic systems. Due to overwhelming demand, the Institute fully committed the program's first round of allotted \$9 million in installation grants within 3 months of opening the program. Projects are located in every Congressional District of the state.
- In addition to grant programs, Tennessee Solar Institute is charged with developing strategic partnerships with solar industry firms and providing a range of technical assistance, workforce development, education and training activities through meetings, conferences and workshops. Among other activities, the Institute offers week-long solar installation training courses, developing a solar value chain database, and conducting a solar industry needs assessment. Preparations will be made in FY 2011 for a Solar Solutions Conference with TVA in August 2011. A second conference will be held in spring 2012.

West Tennessee Solar Farm

- Located in Haywood County, the five-megawatt DC solar array will serve as a renewable energy generation and demonstration site for the public and students to learn about the benefits of renewable energy.
- The farm, to be located at a site along Interstate 40, will be Tennessee's largest solar installation and one of the largest in the Southeast. Demonstrating the zero-carbon production of electricity on a highly visible and significant scale is expected to encourage future renewable-energy interest and investments in the state. The power generated at the Farm is the equivalent of the needs of approximately 500 homes.
- ECD contracted with UT to oversee the design, development, installation, operation and management of the West Tennessee Solar Farm. In July 2010, the Tennessee Building Commission unanimously approved the University of Tennessee's selection of Signal Energy of Chattanooga as the design/build contractor for the West Tennessee Solar Farm.
- Prior to its development, the Solar Farm project was required to prepare and submit an Environmental Assessment under the National Energy Policy Act (NEPA). ECD received a DOE finding of no significant impact (FONSI) for the project in February of 2011. The Costs associated with completing this process are covered by the Recovery Act award.

ENERGY EFFICIENCY AND CONSERVATION BLOCK GRANTS

The Energy Efficiency and Conservation Block Grant (EECBG) Program was authorized in Title V, Subtitle E of the Energy Independence and Security (EISA) Act of 2007 and signed into Public Law (PL 110-140) on December 19, 2007. The Program provides federal grants to units of local government, Indian tribes, states, and territories to reduce energy use and fossil fuel emissions, and for improvements in energy efficiency. It was funded for the first time by the American Recovery and Reinvestment Act (ARRA) of 2009.

ECD administers \$13,818,200 for all cities and counties not eligible for direct funding from the U.S. DOE. As of July 1, 2010 two rounds of grants had been awarded by ECD to 142 Tennessee communities. The Energy Division expects to issue another round of grants in Fiscal Year 2011-2012. The grants will enable communities to implement cost-effective strategies that reduce total energy expenses and save taxpayer money through improved energy efficiency in buildings and transportation systems. Eligible projects fall into several categories: (1) traditional building retrofits to HVAC systems, lighting, windows, doors, and insulation; (2) the replacement of pumps, motors, street lights, and traffic signals with more energy-efficient equipment; and (3) the installation of renewable energy systems.

ENERGY STAR APPLIANCE REBATE PROGRAM (SEEARP)

Tennessee received \$5,963,000 in ARRA funds to establish the State Energy and Efficiency Appliance Rebate Program (SEEARP). Eligible appliances include air source heat pumps, central air conditioners, gas furnaces and room air conditioners with the Energy Star® designation. A rebate of \$250 is available for air source heat pumps and central air conditioners, a rebate of \$150 is available for gas furnaces, and a rebate of \$40 is available for room air conditioners. Purchases made on or after April 22, 2010 are eligible for the rebate.

Statewide, the estimated energy savings for delivery and installation of qualified heating and cooling products is approximately 16 million kilowatt hours per year. A reduction in energy use of that size translates to a yearly savings of almost \$1.4 million in energy costs for Tennesseans and reduces the amount of carbon dioxide emitted into the atmosphere by 32 million pounds annually.

The state of Tennessee is partnering with the Tennessee Valley Authority on the program to reduce administrative and processing costs, as well as to help market and promote SEEARP. The collaboration will allow the state of Tennessee to focus the majority of the ARRA funding on consumer rebates. Consumers receiving rebates under the state's program may also be eligible for additional financial assistance through TVA's existing residential efficiency programs.

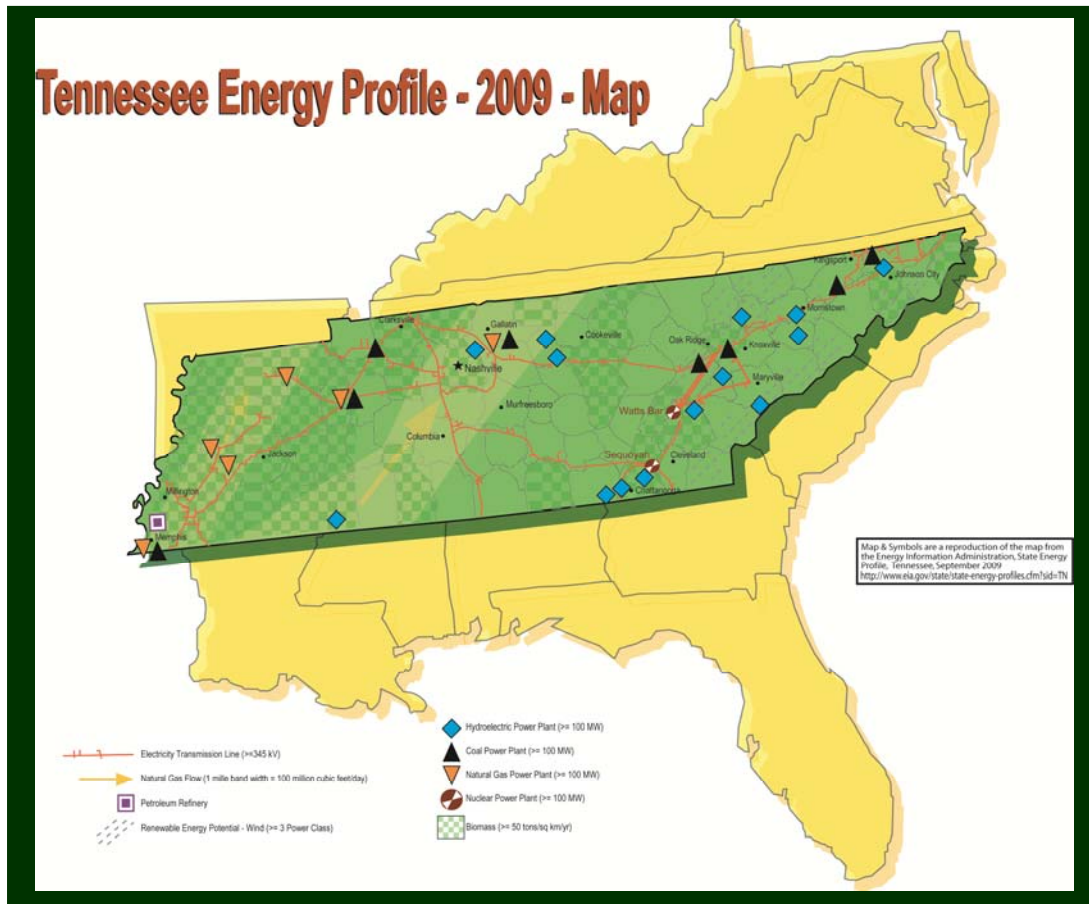
ENHANCING STATE GOVERNMENT ENERGY ASSURANCE

Through the American Recovery & Reinvestment Act's Funding Opportunity for "Enhancing State Government Energy Assurance Capabilities and Planning for Smart Grid Resiliency," the State of Tennessee plans to:

- Revise, expand, and strengthen our existing energy assurance plans contained in the Tennessee Emergency Management Plan (TEMP), including ESF-12 and the Petroleum Contingency Plan.
- Strengthen partnerships with key energy stakeholders through regular meetings to enable effective communication before, during and after an energy disruption.
- Enhance the state's ability to collect, share, analyze, and model energy-related data in order to better track supplies during disruptions.
- Conduct targeted exercises of the state's energy assurance plans which will also include in-house training of appropriate personnel.

These activities will strengthen Tennessee's capability and capacity to plan for, respond to and mitigate the impact of future energy disruptions. The Energy Division expects to release a Request for Proposals under this grant in Fiscal Year 2011-2012.

TENNESSEE ENERGY STATISTICS



Tennessee Quick Facts

- The federally administered Tennessee Valley Authority (TVA) owns over 90 percent of Tennessee's electricity generation capacity.
- A 100-million-gallon-per-year ethanol plant near Obion, Tennessee began production in late 2008, bringing Tennessee's total ethanol operating production capacity to 167 million gallons per year.
- Tennessee is one of the top hydroelectricity-generating States east of the Rocky Mountains.
- The single-unit Watts Bar Nuclear Plant began commercial operation in 1996 and was the last new nuclear reactor to be brought online in the United States.

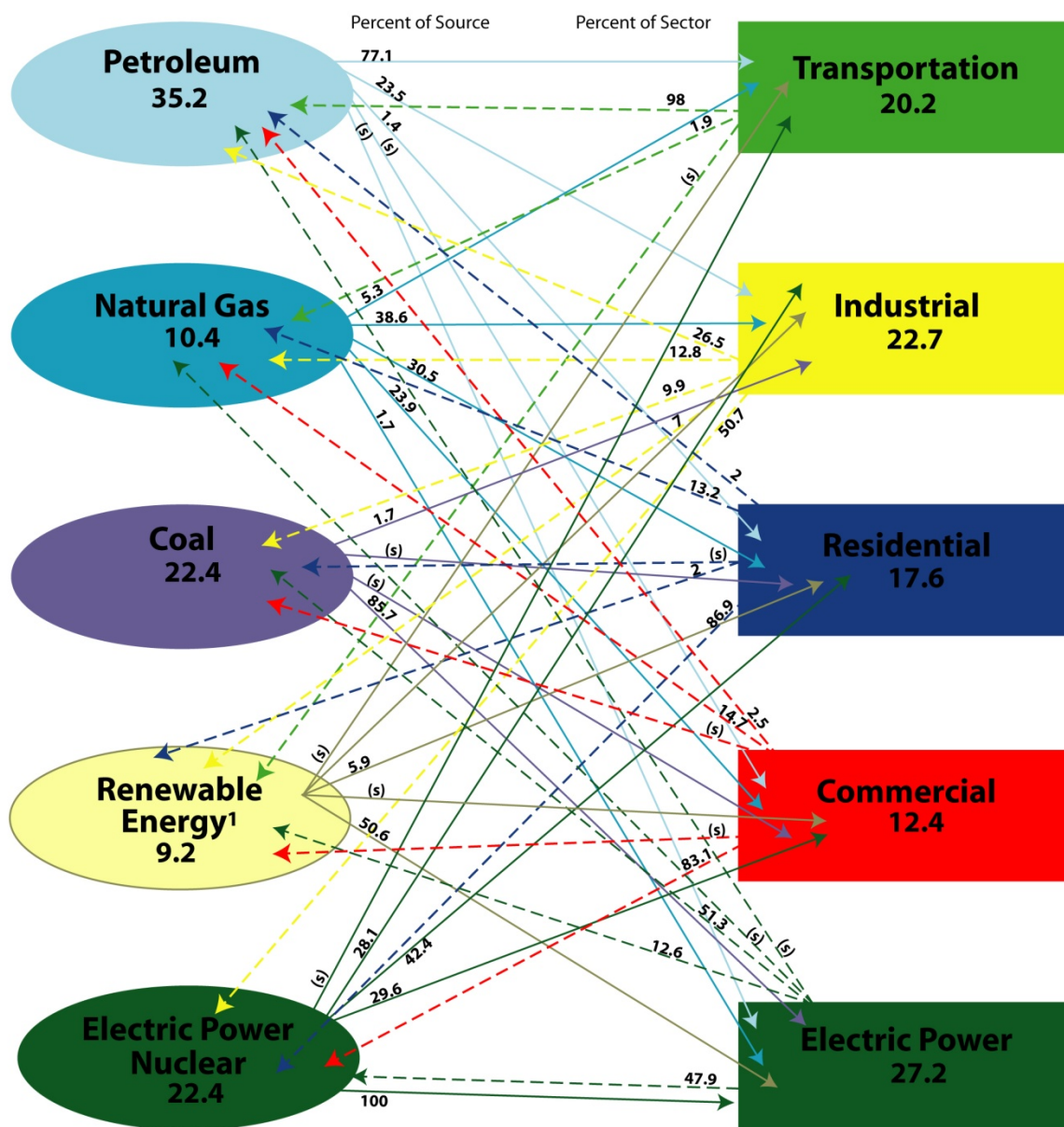
<http://www.eia.gov/state/state-energy-profiles.cfm?sid=TN>

Note: 2009 is the most recent data that the Energy Information Administration has compiled.

Tennessee Primary Energy Consumption by Source & Sector, 2009 (Trillion Btu)

Supply Sources

Demand Sectors



(1. Renewables are included in other energy source total. Only shown to show usage)
(s) = Value less than +0.5 and greater than -0.5.

Note: 2009 is the most recent data that the Energy Information Administration has compiled.

Tennessee Rank for Energy Consumption by End-Use Sector 2009

RANK	SECTOR/Trillion Btu
14	Residential /515.4
16	Commercial /362.5
12	Industrial /666.5
16	Transportation /591.6
15	Total Consumptions /2,136.0

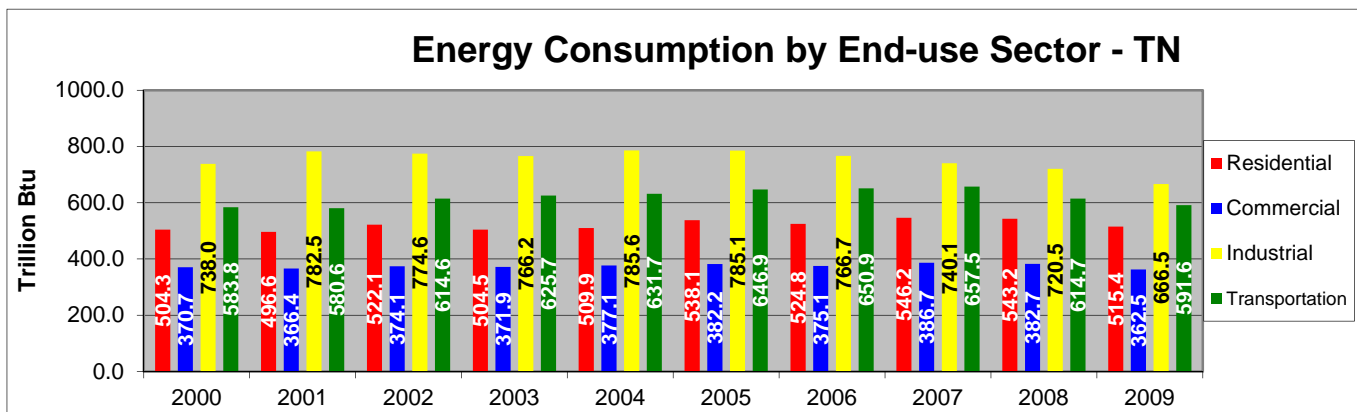
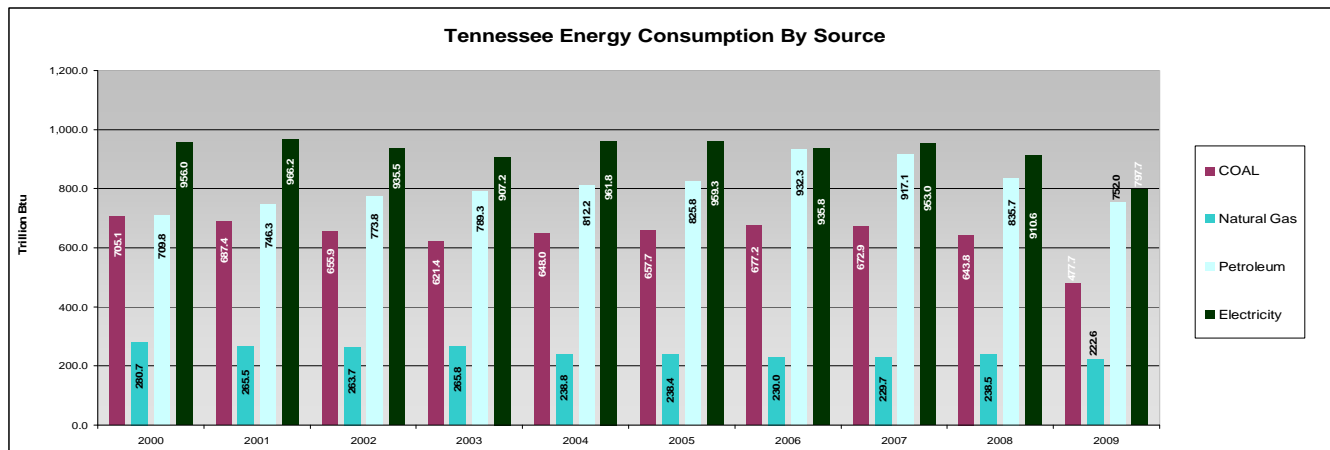
Tennessee Rank for Energy Consumption by Source & Total Consumption per Capita 2009

RANK	SOURCE/Trillion Btu
14	Coal /477.7
33	Natural Gas /222.6
15	Petroleum /778.4
13	Retail Electricity Sales /322.9
20	Total Consumption per Capita /339.5 (Million Btu)

Tennessee Rank for Total Energy Consumption, Gross Domestic Product (GDP), Energy Consumption per Real Dollar of GDP 2009

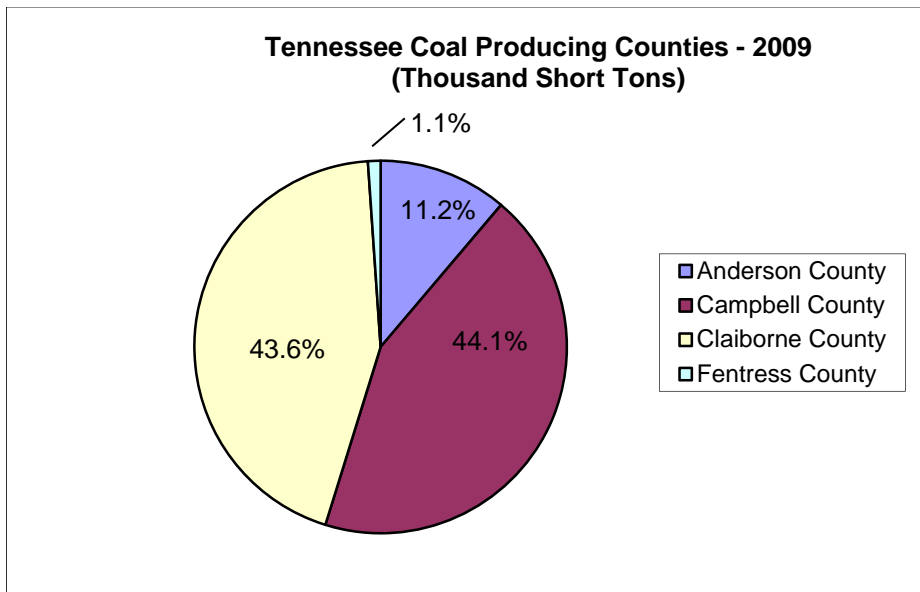
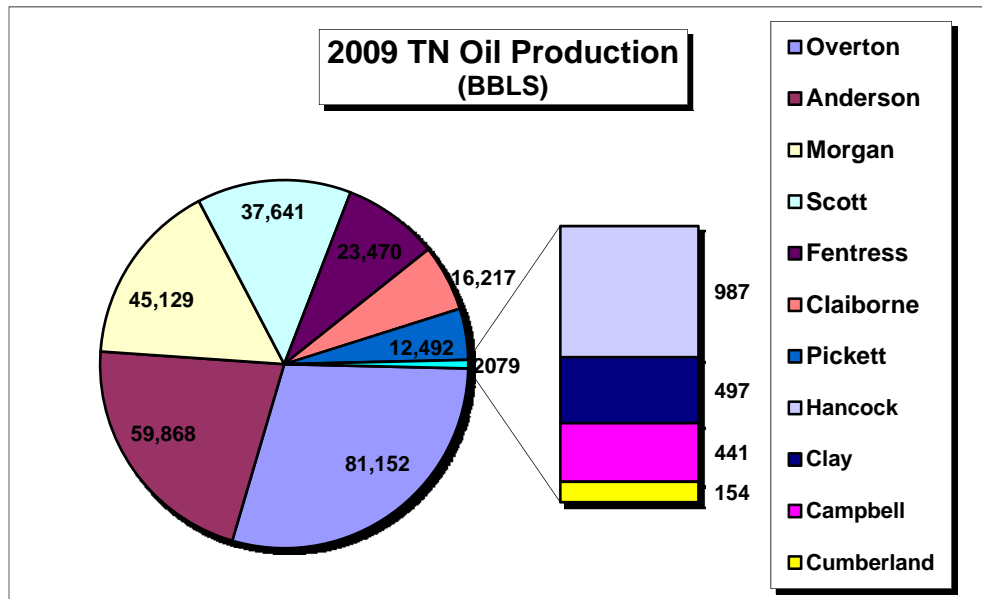
RANK	
15	Total Energy Consumption/2,136.0 (Trillion Btu)
20	Gross Domestic Product (GDP)/219.3 (Billion Chained [2005] Dollars)
19	Energy Consumption per Real Dollar of GDP/9.7 (Thousand Btu per Chained [2005] Dollar)

(Chained dollars is a method of adjusting real dollar amounts for inflation over time, so as to allow comparison of figures from different years.)

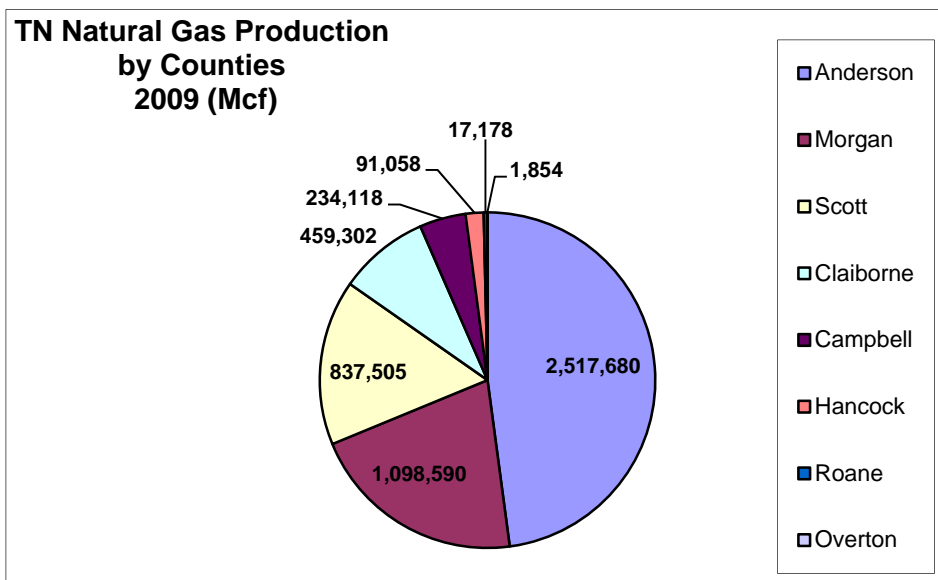


EIA -State Energy Data 2009: Consumption - Table C1

Note: 2009 is the most recent data that the Energy Information Administration has compiled.



Note: 2009 is the most recent data that the Energy Information Administration has compiled. TN Division of Geology derives data for these charts from EIA.



Energy Related Business Started/Ceased

The following chart lists the number of energy related new businesses that started activity during FY 2010-2011, and the number of energy related businesses that ceased operations during FY 2010-2011.

<u>Type of Business/Product</u>	<u>Began/Ceased</u>
Plumbing, heating, air conditioning	0/50
Masonry, other stonework.....	1/21
Plastering, drywall, insulation	0/13
Millwork.....	0/3
Converted paper products	0/0
Building paper and building board mills	0/0
Asphalt felts and coatings	0/0
Rubber products.....	0/0
Flat glass	0/0
Asbestos.....	0/0
Mineral wool	0/0
Heating equipment - electrical	0/0
Metal doors, sash, and trim	0/1
Fabricated plate work	0/2
Refrigeration and heating equipment	0/0
Electric house wares and fans	0/0
Semiconductors and related devices.....	0/0
Automatic temperature controls.....	0/1
Process control instruments.....	0/0
Instruments for measuring electricity	0/0
Construction materials	0/5
Warm air-heating, air conditioning	0/6
Lumber and building materials.....	0/11
Wholesale Trade - durable goods.....	0/6
Research and development laboratories	0/0
Management and public relations	0/0
TOTALS	1/119

(SOURCE: Tennessee Dept. of Labor and Workforce Development, 2010-11)



Energy Division

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